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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Flehr Hohbach Test
Albritton & Herbert
Suite 3400
Four Embarcadero Center
San Francisco, CA 94111-4187

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/049,705

Applicant(s)

FOGER ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 08/05/02 was considered by the examiner.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The preliminary amendment filed 06/17/02 does not introduce new matter into the disclosure.
5. The disclosure is objected to because of the following informalities: it is noted that the specific makes reference to several copending applications, see page 7, in this case, such reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications, if applicable; also, the status of nonprovisional application(s) (whether patented

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or abandoned) should also be included. If a parent application has become a patent, the expression “now Patent No. _____” should follow the filing date of the application. If a parent application has become abandoned, the expression “now abandoned” should follow the filing date of the parent application. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al 5302470.

The present application is directed to a process for producing electricity in a fuel cell wherein the disclosed inventive concept comprises the specific reforming temperature.

With respect to claim 1:

Okada et al disclose a desulfurized raw fuel material 1 that is mixed with steam at an appropriate ratio in a mixer 3 and transferred to a steam reformer 4 where it is converted by steam reforming reaction to a fuel gas consisting of hydrogen. The fuel gas is further transferred to a fuel electrode 7 in a fuel cell unit 6 where it is partially consumed by electrochemical reaction with a supply of air 9 fed by a compressor 8 to an oxidant electrode 10 of the fuel cell unit 6 so that electricity is generated while water is released (COL 8, lines 20-37). **EXAMPLE 1** shows that the reforming reaction takes place at reaction temperatures of 450 °C (COL 11, line

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50-60). **EXAMPLES 1-7** show the use of town gas, naphta, LPG among others (See EXAMPLES 1-7). *Thus, the fuels are higher carbon (C_{2+}) hydrocarbons.* **TABLE 1** also shows methane content of 86.9 % by volume (See Table 1).

With respect to claims 2-3 and 16-17:

Okada et al shows methane content of 86.9 % by volume (See TABLE 1).

As to claims 4, 18-19:

Okada et al teach the steam reforming reaction at least at temperature of about 450 °C (COL 7, lines 11-16). It is also disclosed a temperature range of 350-400 °C (COL 7, line 5-7).

With respect to claim 5:

EXAMPLE 7 shows adiabatic conditions (refer to TABLE 2) as well as quasi-adiabatic conditions (COL 15, line 25-27).

With respect to claims 6 and 20-21:

It is disclosed that the S/C ratio is at least 0.7, or 1.5 depending on the specific catalyst material (COL 4, lines 53-65/COL 7, lines 17-22/COL 9, lines 17-22). *Thus, Okada et al directly teach the use of the S/C ratio within the claimed ratio.*

As to claims 7-8 and 13:

It is disclosed that surplus steam remains unused during the steam reforming reaction (COL 3, lines 35-40). It is also disclosed that the fuel gas discharged from the fuel electrode 7 is transferred to a burner 11 in the steam reformer 4 where it is mixed therewith and burned for heating the steam reformer (COL 2, lines 42-47). It is also disclosed that the separated steam is transferred to the mixer 3 where it is mixed with the raw fuel material 1, then, fed to the steam

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reformer 4 for use in the steam reforming reaction (COL 2, lines 55-60). It is disclosed that a reactive gas after electrode reaction is recovered for reuse (COL 9, lines 57-64).

On the matter of claims 9-11:

Okada et al discloses the use of raw fuel material selected from methane, ethane, propane, butane, natural gas, naphta, kerosene, gas oil, LPG, town gas and their mixtures (COL 7, lines 32-35/ COL 1, lines 35-40/ ABSTRACT/ EXAMPLES 1-7).

As to claim 12:

Okada et al disclose that high temperature fuel cell e.g. a molten carbonate fuel cell or a solid oxide fuel cell are types of fuel cell that can be employed for this purposes (COL 7, lines 40-44). *Thus, the specific temperature reaction is inherent to these fuel cell and their operations.*

With respect to claims 14-15:

Okada et al teach that the raw fuel material is mixed with steam and converted by the steam reforming reaction in a steam reformer to a fuel gas (COL 8, line 65 to COL 9, line 3). It is evident from **TABLES 3-6** that a complete conversion of the higher carbon (C_{2+}) hydrocarbon occurs as the composition of the fuel gas shows no content of the higher carbon (C_{2+}) hydrocarbon (See TABLES 3-6).

Thus, Okada et al anticipates the instant claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326. The examiner can normally be reached on Monday-Thursday (8:30 am - 7:00 pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (703) 308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Raymond Alejandro
Examiner
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A handwritten signature in black ink, appearing to read 'RAM', with a long horizontal flourish underneath.